SAINT JOHN AIR QUALITY DATA

1985 ANNUAL REPORT

D -8605

Compiled by:

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EXECUTIVE SUMMARY

This report summarizes ambient air quality data and monitoring activity in the Greater Saint John area for 1985. Using the IQUA long term rating system that has been applied to cities across Canada, Saint John air quality is described as GOOD for the year. In Part 3 of this report, some ten years of monitoring data is summarized. It is obvious that rather significant improvement with respect to locally produced pollutants has been accomplished by Saint John industry.

However, Saint John is an industrial city where new industry and expanded production at existing facilities must always be anticipated. The monitoring system has been modified to more efficiently assess these anticipated trends.

Odors continue to be a significant source of complaints. While an effective continuous odor monitor has not yet been developed, improved total reduced sulphur compound monitors have been introduced and operate in West Saint John, Millidgeville and East Saint John on a seasonal basis.

Any questions or comments should be directed to the address on the cover sheet.

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ANNUAL REPORT

SAINT JOHN AIR QUALITY

1. INTRODUCTION

Environment New Brunswick owns and operates an air quality monitoring network in Saint John which includes a number of sampling locations linked by electronic telemetry to the central office.

A failure of the microprocesser on October 31, 1984 caused some instruments to be shut down. Selected instruments at the Post Office, Forest Hills and Champlain Heights were maintained using strip recorders. Staff completed an evaluation of several proposals to replace and update the obsolete telemetry system. Early in 1985, it was decided to proceed with a proposal from Canadian Applied Technology.

The staff completed the Saint John Air Monitoring Network Review which examined the data collected since the department began operating the system in 1973 until the end of 1984 to determine the future of the network. A number of instruments and two sites were dropped from the network as part of the streamlining process.

The site changes included dropping the Red Head and Silver Falls Stations from the network. The representativeness of data from the DeMonts Street site was questioned and staff began evaluation of alternate sites.

Some instrumentation was dropped from the network due to

lower sulphur dioxide emissions, the lower ambient levels, and the age and maintenance requirements of the existing monitors. Sulphur dioxide instruments were removed from the Western District Police Station, Millidgeville and the DeMonts Street locations. Monitors are designated as Primary or Secondary (Table 1) which will denote their relative importance to the network.

TABLE 1

SUMMARY OF MONITOR/STATION STATUS

FOR 1985 SAINT JOHN AIR MONITORING NETWORK

Station	Primary	Secondary
Post Office	SO_2	
	CO	
	NO_2	
	O_3	
Provincial Building	TSP	
Forest Hills	SO_2	NO_2
	O_3	CO
	TSP	
Champlain Heights	H_2S	SO_2
DeMonts Street	H_2S	
Western Dist. Police Sta.	TSP	
Red Head		SO_2
Millidgeville	H_2S	TSP
Silver Falls		SO_2

PRESENTATION OF DATA

2.1 GENERAL

The following tables present frequency distributions of hourly average readings, monthly and annual means and the number of monthly and annual observations.

The number of exceedances of hourly provincial standards (or federal acceptable guideline limit in the case of ozone) and the annual average concentrations are presented in Summary Tables for each station at the beginning of each of the following subsections of this chapter.

The number of hourly samples taken should be noted before drawing any conclusions regarding monthly or annual averages. These averages are calculated based on all samples taken with no miniumum number specified.

2.2 CHAMPLAIN HEIGHTS

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Sulphur Dioxide	0.6	1

CHAMPLAIN HEIGHTS

SULPHUR DIOXIDE
(PPHM)
**** FREQUENCY DISTRIBUTION ****

MONTH	0-2	3-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	626	30	0	0	0	656	0.3
FEB	554	41	5	8	0	608	0.8
MAR	632	38	5	7	0	682	0.8
APR	562	22	9	0	0	593	0.5
MAY	659	22	0	0	0	681	0.2
JUNE	629	15	0	0	0	644	0.2
JULY	582	25	2	0	0	609	0.4
AUG	404	4	0	0	0	408	0.1
SEPT	467	22	0	0	0	489	0.4
OCT	468	34	22	22	1	547	2.1
NOV	641	18	1	0	0	660	0.3
DEC	627	47	2	5	0	681	0.9
ANNUAL TOTAL						7258	0.6

2.3 FOREST HILLS

SUMMARY

PARAMETER	ANNUAL AVERAGE	NUMBER 1 HOUR EXC.
Hydrogen Sulphide	0.0 pphm	0
Nitrogen Dioxide	1.1 pphm	0
Ozone	3.0 pphm	116
Sulphur Dioxide	0.9 pphm	0
Total Suspended Lead	N/A	N/A
Total Suspended Particulate	36.1 ug/m^3*	N/A
Total Suspended Sulphate	3.70 ug/m^3*	N/A

* Annual Average expressed as a geometric mean

FOREST HILLS

HYDROGEN SULPHIDE

(PPHM)

**** FREQUENCY DISTRIBUTION ****

MONTH	0	01	02-05	06-10	11+	NO. OF SAMPLES	MONTHLY AVERAGE
AUGUST	220	9	0	0	0	229	0.0
ANNUAL TOTAL						229	0.0

FOREST HILLS

NITROGEN DIOXIDE

(PPHM)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-2	03-05	06-10	11-21	22+	NO. OF SAMPLES	MONTHLY AVERAGE
OCT	173	1	0	0	0	174	0.7
NOV	707	11	0	0	0	718	0.7
DEC	609	135	0	0	0	744	1.5
ANNUAL TOTAL						1636	1.1

FOREST HILLS

OZONE

(PPHM)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-1	02-05	06-08	09-12	13+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	234	481	0	0	0	715	1.7
FEB	152	514	4	0	0	670	2.3
MAR	60	491	25	0	0	576	3.5
APR	149	313	1	0	0	463	2.3
MAY	48	363	140	28	0	579	4.6
JUNE	34	374	101	13	0	522	4.2
JULY	45	483	173	35	1	737	4.4
AUG	208	360	92	31	8	699	3.4
SEPT	409	302	7	0	0	718	1.5
OCT	262	429	31	0	0	722	2.3
NOV	114	544	60	0	0	718	3.4
DEC	233	485	24	0	0	742	2.6
ANNUAL						7861	3.0

FOREST HILLS

SULPHUR DIOXIDE

(PPHM)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-2	03-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
FEB	589	21	0	0	0	610	0.4
MAR	675	22	0	0	0	697	0.3
APR	583	18	1	0	0	602	0.3
MAY	531	36	0	0	0	567	0.6
JUNE	670	20	0	0	0	690	0.4
JULY	409	261	39	10	0	719	3.4
AUG	469	179	21	2	0	671	2.2
SEPT	636	58	4	0	0	698	0.7
OCT	708	18	0	0	0	726	0.3
NOV	716	2	0	0	0	718	0.1
DEC	707	35	0	0	0	742	1.0
ANNUAL TOTAL						7440	0.9

FOREST HILLS

SUSPENDED PARTICULATE

(UG/M^3)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-30	31-60	61-90	91-120	120+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	1	2	2	1	0	6	51.1
FEB	2	1	1	0	0	4	35.7
MAR	2	2	1	0	0	5	43.6
APR	1	4	0	0	0	5	34.1
MAY	3	1	1	0	0	5	32.9
JUNE	3	2	0	0	0	5	26.0
JULY	1	4	0	0	0	5	41.5
AUG	2	3	0	0	0	5	35.9
SEPT	2	2	1	0	0	5	36.2
OCT	4	1	0	0	0	5	24.1
NOV	3	2	0	0	0	5	27.5
DEC	0	2	2	1	0	5	55.2
ANNUAL	24	26	8	2	0	60	36.1

2.4 HAMPTON

SUMMARY

PARAMETER	ANNUAL AVERAGE	NUMBER OF 1 HOUR EXCEED.
Ozone	1.0	0

HAMPTON DNR OFFICE

OZONE

(PPHM)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-01	02-05	06-08	09-12	13+	NO. OF SAMPLES	MONTHLY AVERAGE
JUNE	456	127	0	0	0	583	0.9
JULY	520	223	0	0	0	743	1.2
AUG	160	56	0	0	0	216	1.0
ANNUAL TOTAL						1542	1.0

2.5 MILLIDGEVILLE

SUMMARY

PARAMETER	ANNUAL AVERAGE	NUMBER 1 HOUR EXCEED
Total Suspended Lead	N/A	N/A
Total Suspended Particulate	35.1 ug/m^3	N/A
Total Suspended Sulphate	3.27 ug/m^3	N/A

* Annual Average expressed as a Geometric Mean. There were 2 exceedances of the 24 hour particulate standard.

MILLIDGEVILLE

SUSPENDED PARTICULATE

(ug/m^3)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-30	31-60	61-90	91-120	120+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	2	2	0	2	0	6	51.4
FEB	1	3	0	0	0	4	36.8
MAR	2	2	0	0	1	5	48.2
APR	1	2	0	2	0	5	54.0
MAY	4	2	0	0	0	6	27.3
JUNE	3	2	0	0	0	5	26.8
JULY	1	4	0	0	0	5	38.9
AUG	4	1	0	0	0	5	24.9
SEPT	3	2	0	0	0	5	26.7
OCT	4	1	0	0	0	5	23.0
NOV	2	2	0	1	0	5	36.1
DEC	1	0	1	0	2	3	52.1
ANNUAL	28	23	1	5	2	59	35.1

2.6 POST OFFICE

SUMMARY

PARAMETER	ANNUAL AVERAGE	NUMBER 1 HOUR EXCEED
Carbon Monoxide	0.5 ppm	0
Nitrogen Dioxide	1.2 pphm	0
Ozone	2.0 pphm	2
Sulphur Dioxide	1.1 pphm	0
Total Suspended Lead	N/A	N/A
Total Suspended Particulate	36.5 ug/m^3 *	N/A
Total Suspended Sulphate	4.66 ug/M^3 *	N/A

* Annual Average expressed as a Geometric Mean

POST OFFICE

CARBON MONOXIDE

(PPM)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-01	02-06	07-12	13-35	36+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	655	39	1	0	0	695	0.2
FEB	560	43	1	0	0	604	0.4
MAR	707	34	0	0	0	741	0.2
APR	146	13	0	0	0	159	0.3
MAY	192	13	0	0	0	205	0.2
JUNE	578	36	0	0	0	614	0.3
JULY	383	12	0	0	0	395	0.3
AUG	335	45	0	0	0	380	0.6
SEPT	529	75	0	0	0	604	0.6
OCT	674	65	1	0	0	740	0.7
NOV	620	91	2	0	0	713	0.7
DEC	616	125	3	0	0	744	1.0
ANNUAL TOTAL						6594	0.5

POST OFFICE

NITROGEN DIOXIDE

(PPHM)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-02	03-05	06-10	11-21	22+	NO. OF SAMPLES	MONTHLY AVERAGE
FEB	530	73	1	0	0	604	1.3
MAR	613	80	0	0	0	693	1.0
APR	285	84	0	0	0	369	1.6
MAY	550	122	1	0	0	673	1.4
JUNE	579	35	0	0	0	614	0.7
JULY	427	50	0	0	0	477	1.2
AUG	523	56	1	0	0	580	1.3
SEPT	566	560	0	0	0	622	1.2
OCT	630	40	0	0	0	670	1.0
NOV	630	45	0	0	0	675	1.1
DEC	649	74	1	0	0	744	1.2
ANNUAL TOTAL						6721	1.2

POST OFFICE

OZONE

(PPHM)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-01	02-05	06-08	09-12	13+	NO. OF SAMPLES	MONTHLY AVERAGE
FEB	274	329	0	0	0	603	1.6
MAR	167	404	0	0	0	571	1.9
APR	213	101	0	0	0	314	1.4
MAY	146	514	14	0	0	674	2.5
JUNE	178	360	13	0	0	551	2.3
JULY	130	367	73	0	0	570	3.1
AUG	233	373	39	2	0	647	2.3
SEPT	371	315	0	0	0	686	1.6
OCT	289	455	0	0	0	744	1.8
NOV	327	390	0	0	0	717	1.6
DEC	326	418	0	0	0	744	1.7
ANNUAL TOTAL						6821	2.0

POST OFFICE

SULPHUR DIOXIDE

(PPHM)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-02	03-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	694	19	0	0	0	713	0.6
FEB	527	9	0	0	0	536	0.5
MAR	629	2	0	0	0	631	0.3
APR	146	12	0	0	0	158	0.8
MAY	347	228	4	4	0	583	2.8
JUNE	440	170	10	4	0	624	2.4
JULY	481	21	0	0	0	502	0.6
AUG	608	21	0	0	0	629	0.6
SEPT	674	12	0	0	0	686	0.6
OCT	688	51	0	0	0	739	1.2
NOV	650	55	0	0	0	705	1.2
DEC	602	142	0	0	0	744	1.5
ANNUAL TOTAL						7250	1.1

PROVINCIAL BUILDING

SUSPENDED PARTICULATE

(UG/M³)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-30	31-60	61-90	91-120	120+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	3	1	2	0	0	6	37.4
FEB	2	2	0	0	0	4	34.8
MAR	2	2	1	0	0	5	40.9
APR	0	2	2	1	0	5	53.8
MAY	3	3	0	0	0	6	32.9
JUNE	2	3	0	0	0	5	27.3
JULY	1	4	0	0	0	5	40.4
AUG	2	1	0	1	0	4	39.6
SEPT	1	1	1	1	0	4	50.8
OCT	3	2	0	0	0	5	28.4
NOV	1	4	0	0	0	5	36.5
DEC	4	1	0	0	0	5	28.6
ANNUAL	24	26	6	3	0	59	36.5

2.7 RED HEAD

SUMMARY

PARAMETER	ANNUAL AVERAGE	NUMBER 1 HOUR EXCEED
Total Suspended Lead	N/A	N/A
Total Suspended Particulate	23.1 ug/m³ *	N/A
Total Suspended Sulphate	3.59 ug/m³ *	N/A

* Annual Average expressed as a Geometric Mean

RED HEAD

SUSPENDED PARTICULATE

(ug/m^3)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-30	31-60	61-90	91-120	120+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	2	4	0	0	0	6	29.6
FEB	3	1	0	0	0	4	21.4
MAR	2	2	1	0	0	5	41.2
APR	4	0	1	0	0	5	28.9
MAY	5	1	0	0	0	6	17.0
JUNE	4	1	0	0	0	5	16.1
JULY	2	2	0	0	0	4	27.1
AUG	5	0	0	0	0	5	16.3
SEPT	4	0	1	0	0	5	20.6
OCT	0	0	0	0	0	0	-
NOV	0	0	0	0	0	0	-
DEC	0	0	0	0	0	0	-
ANNUAL	31	11	3	0	0	45	33.1

2.8 WESTERN DISTRICT POLICE STATION

SUMMARY

PARAMETER	ANNUAL AVERAGE	NUMBER 1 HOUR EXCEED
Total Suspended Lead	N/A	N/A
Total Suspended Particulate	21.1 ug/m³ *	N/A
Total Suspended Sulphate	2.25 ug/m³ *	N/A

* Annual Average expressed in a Geometric Mean

WESTERN DISTRICT POLICE STATION

SUSPENDED PARTICULATE

(ug/m^3)

**** FREQUENCY DISTRIBUTION ****

MONTH	0-30	31-60	61-90	91-120	120+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	3	3	0	0	0	6	28.1
FEB	1	1	0	0	0	2	28.2
MAR	3	2	0	0	0	5	33.2
APR	1	4	0	0	0	5	31.6
MAY	4	2	0	0	0	6	24.8
JUNE	4	1	0	0	0	5	20.7
JULY	3	1	0	0	0	4	15.3
AUG	5	0	0	0	0	5	17.4
SEPT	4	0	0	0	0	4	17.2
OCT	5	0	0	0	0	5	13.4
NOV	4	1	0	0	0	5	18.5
DEC	4	0	0	0	0	4	15.5
ANNUAL	41	15	0	0	0	56	21.2

3. CULMULATIVE RECORD OF ANNUAL CONCENTRATIONS

3.1 SULPHUR DIOXIDE

(UG/M^3)

YEAR	POLICE STATN	MILL'G VILLE	POST OFFICE	RED HEAD	FOREST HILLS	CHAMPL'N HEIGHTS	DEMONTS STREET	SILVER FALLS
1975	2.1	20.8	34.1	16.7	-	-	-	-
1976	3.8	20.2	38.8	15.7	27.5	-	-	-
1977	4.4	20.6	42.7	21.4	48.6	27.6	56.0	-
1978	9.2	13.4	19.0	17.7	40.1	35.7	35.4	-
1979	7.7	17.4	48.4	13.3	38.7	34.2	33.1	-
1980	19.3	16.9	34.0	8.0	54.0	42.0	25.4	-
1981	15.9	15.0	39.2	13.2	44.4	48.5	-	-
1982	13.3	16.5	17.4	16.4	47.7	27.4	12.2	-
1983	10.6	13.3	15.9	8.0	34.5	21.2	10.6	18.6
1984	10.6	8.0	18.6	5.3	29.2	10.6	15.9	21.2
1985	-	-	29.2	-	23.9	15.9	-	-

NOTE: The Provincial Annual Average Standard for Sulphur Dioxide is 60 ug/m^3

CUMULATIVE RECORD OF ANNUAL CONCENTRATIONS

3.2 TOTAL SUSPENDED PARTICULATES/SULPHATE
(ug/m^3)

YEAR	W.D.POLICE STATION		MILL'G VILLE		RED HEAD		PROVINCIAL BUILDING		FOREST HILLS	
	TSP	SO_4	TSP	SO_4	TSP	SO_4	TSP	SO_4	TSP	SO_4
1975	36.7	-	52.6	-	31.2	-	51.7	-	-	-
1976	36.8	-	55.8	-	28.1	-	49.4	-	51.0	-
1977	32.8	-	44.3	-	27.9	-	63.0	-	43.6	-
1978	38.2	2.3	54.9	-	30.6	4.1	56.8	5.7	53.2	-
1979	36.9	1.3	50.1	-	28.6	2.1	58.3	4.1	38.1	-
1980	38.0	2.3	54.8	-	35.8	2.9	68.8	6.2	43.3	-
1981	30.5	1.66	38.5	-	32.7	2.52	57.2	3.89	38.5	-
1982	33.6	2.39	41.3	-	29.9	2.74	58.7	4.95	43.3	-
1983	26.5	2.18	38.8	3.20	23.8	3.54	39.7	4.11	45.6	4.26
1984	24.1	2.54	32.8	3.47	19.3	3.19	33.1	4.43	33.7	3.20
1985	21.2	2.25	35.1	3.27	23.1	3.59	36.5	4.66	36.1	3.70

NOTE: The Provincial Annual Average Standard for Total Suspended Particulate is 70 ug/m^3. No standard has yet been adopted for Sulphate.

CUMULATIVE RECORD OF ANNUAL CONCENTRATIONS

3.3	Carbon Monoxide (ug/m^3)		Hydrogen Sulphide (ug/m^3)		Nitrogen Dioxide (ug/m^3)	
Year	Post Office	Forest Hills	DeMonts Street	Mill'g ville	Post Office	Forest Hills
1975	-	-	-	-	-	-
1976	-	-	-	-	-	-
1977	-	1510	-	-	-	19.6
1978	-	720	6.6	-	-	13.5
1979	-	650	4.8	-	-	16.9
1980	811	746	9.1	-	5.7	13.5
1981	397	464	0.6	-	31.0	-
1982	695	495	2.3	-	28.5	38.6
1983	680	1200	4.2	1.4	22.8	49.4
1984	1440	1080	2.8	-	22.8	11.4
1985	600	-	-	-	22.8	20.9

NOTE: Provincial Annual Average Standards have not been adopted for Carbon Monoxide or Hydrogen Sulphide. The standard for Nitrogen Dioxide is 100 ug/m^3.

3.4 RECORD OF ANNUAL CONCENTRATIONS

	OZONE (ug/m³)			DUSTFALL (ug/m³)			
Year	Post Office	Forest Hills	Police Station	Brookville Road	Brookville Hill	Brookville Bishops	Provincial Hospital
1975	-	-	-	-	-	-	8.1
1976	-	-	-	10.3	11.8	24.6	9.2
1977	-	76.3	-	4.5	8.2	11.2	9.1
1978	-	63.1	-	11.0	9.0	16.1	13.0
1979	-	-	-	5.2	8.9	13.9	8.2
1980	4.7	52.5	46.5	5.1	17.4	21.3	11.6
1981	35.2	45.2	-	7.1	13.9	15.3	14.1
1982	44.5	43.3	-	5.6	5.0	-	7.3
1983	46.0	44.0	48.0	-	-	-	-
1984	44.0	78.0	-	-	-	-	-
1985	40.0	60.0	-	-	-	-	-

CUMULATIVE RECORD OF ANNUAL CONCENTRATIONS

3.5 SULPHATION RATE

($mg/SO_3/100cm^2/day$)

Year	Provincial Hospital	Musquash Road	Provincial Building	Red Head	Ludgate Lake	Rockwood Park
1974	1.89	-	-	0.62	-	-
1975	2.46	-	-	1.22	-	-
1976	1.62	0.31	1.09	0.42	0.25	0.51
1977	1.45	0.26	1.43	0.45	0.26	0.50
1978	1.83	0.41	1.04	0.46	0.52	0.55
1979	3.91	0.37	1.39	0.79	0.45	0.59
1980	1.44	0.13	0.79	0.36	0.20	0.47
1981	1.48	0.22	0.90	0.36	0.24	0.51
1982	-	0.21	1.02	0.35	0.24	0.52
1983	1.36	-	0.75	0.33	-	-

Year	Bloomsb. Mountain	Shadow Lake	Canaport	Forest Hills	DeMonts Street	Mill'g ville
1976	0.31	0.15	-	-	-	0.62
1977	0.25	0.30	-	0.75	0.65	0.42
1978	0.46	0.16	-	1.21	0.81	0.78
1979	0.43	0.50	0.49	0.74	1.02	0.53
1980	0.17	0.20	0.27	0.55	0.49	0.43
1981	0.17	0.19	0.27	0.66	0.48	0.32
1982	0.25	0.29	0.32	0.74	0.55	0.39
1983	-	-	-	0.66	0.47	0.39

Sulphation Rate monitoring was discontinued in 1983

CUMULATIVE RECORD OF ANNUAL CONCENTRATIONS

TOTAL SUSPENDED LEAD

(UG/M³ GEOMETRIC MEANS)

YEAR	FOREST hILLS	RED hEAD	PROVINCIAL BUILDING	MILL'G -VILLE	POLICE STATION	FREDERICTON FIRE STATION
1974	-	0.08	-	0.24	0.44	-
1975	-	0.11	0.46	0.33	0.41	0.76
1976	0.25	0.06	0.31	0.23	0.18	0.55
1977	0.18	0.04	0.23	0.12	0.14	0.42
1978	0.17	0.07	0.20	0.18	0.12	0.34
1979	0.18	0.04	0.21	0.19	0.11	0.39
1980	0.26	0.03	0.19	0.26	0.10	0.34
1981	0.24	0.05	0.20	0.21	0.11	0.34
1982	0.21	0.05	0.17	0.19	0.11	0.29
1983	0.15	0.03	0.12	0.11	0.08	0.24
1984	0.11	0.05	0.11	0.10	0.09	0.17

* Results of lead samples were not available for 1985 at time of publication

4. DISCUSSION OF RESULTS

The results presented here indicate good long term air quality is being maintained in the Saint John region. Any problems were short term in nature except for ozone, the bulk of which is imported from the United States under conditions of warm southwesterly flows. The long term air quality objectives as set out by the Federal Guidelines and Provincial Regulations are being met consistently.

There was one exceedance of the Provincial One Hour Standard for sulphur dioxide measured at Champlain Heights, one of three stations measuring this pollutant. There were no exceedances measured in 1984. Annual averages were well below the Provincial Standard and levels showed a decrease at Forest Hills while Champlain Heights and the Post Office increased over the previous year. The highest annual average was recorded at the Post Office. The continued general decreases in sulphur dioxide concentrations can be at least partially attributed to significantly less power generation at the Coleson Cove and Courtenay Bay Thermal Generating Stations and lower production at the Irving Refinery over the past three years resulting in lower emissions. The Hog Fuel Boiler at Irving Pulp and Paper commenced operation in October and will further reduce sulphur dioxide emissions from fuel burning during the coming years.

There were no exceedances of the Provincial One Hour Standard at either of the two carbon monoxide monitoring stations. The annual average at the Post Office decreased from the

previous year. Low data return for Forest Hills prevented calculation of a meaningful annual average.

There were no exceedances of the Provincial One Hour Standard at either of the two stations monitoring nitrogen dioxide. The annual average increased at Forest Hills with no change recorded at the Post Office.

There were one hundred and eighteen exceedances of the Federal Ambient Air Quality Objectives for ozone at the two monitoring stations, a decrease from the previous year. The annual average also decreased at both stations. The highest annual average continues to be recorded at Forest Hills. The major contribution is from long range transport. The significant difference in annual levels between the two stations may be attributed to higher traffic flow near the Post Office Station. Automobiles produce pollutants which scavenge ozone from the atmosphere.

Annual Averages for T.S.P. at all locations were below the Provincial Standard. The Provincial Building had the highest annual average. There were two exceedances of the Provincial Twenty-Four Hour Standard recorded at the Millidgeville Station, one of five stations monitoring this pollutant. This is a decrease from seven exceedances measured in 1984. There was a continued decrease in the annual average for T.S.P. at the Western District Police Station while there were slight increases at the other stations. There are five locations which measured sulphate and lead in conjunction with T.S.P. The highest annual

average of sulphate continued to be recorded at the Provincial Building. The 1985 Lead data for the network was not available from the National Air Pollution Surveillance group at the time of publication and will be reported in the 1986 annual report.

Ambient air quality data has always been an important part of any airshed management program. It has served as the primary indicator of the success of control programs. However, in addition to the concentration of pollutants in the air, another indicator has become equally as important. This indicator is the rate of deposition of pollutants onto our soils and waters. While long recognized as important, this indicator has suffered lack of attention due to difficulties in making measurements. Techniques now available include precipitation sampling and moss or lichen studies. Because of the high sensitivity of the environment to the west of Saint John to inputs of acidic pollutants, special studies have been and are being carried out to measure this deposition. It is anticipated that results from these studies will be ready for inclusion in next year's report.

APPENDIX A

A.1 REGULATIONS AND GUIDELINES

GROUND LEVEL AIR QUALITY

NEW BRUNSWICK REGULATION

Contaminant	1 Hr.	8 Hr.	24 Hr.	Annual
Carbon Monoxide	35,000	15,000	-	-
Hydrogen Sulphide	15	-	5	-
Nitrogen Dioxide	400	-	200	100
Sulphur Dioxide	900	-	300	60
Total Suspended Particulate	-	-	120	70

FEDERAL ACCEPTABLE GUIDELINE

Contaminant	1 Hr.	24 Hr.	Annual
Ozone	160	50	30

REGULATIONS/GUIDELINES FROM OTHER PROVINCES

Contaminant	1 Hr.	24 Hr.	Annual
Dustfall		7 gm/m^2	4.6 gm/m^2
Lead	5	2	

All values in micrograms per cubic meter unless otherwise noted.

A.2 ABBREVIATIONS

The following is a list of abbreviations and notations used in this report.

pphm - parts per hundred million

ppm - parts per million

ug/m^3 - micrograms per cubic meter

N/A - data not available

A. 3 CONVERSION TO METRIC UNITS

The units of measurement used in the monthly reports were converted to metric units for presentation of annual averages. The conversion factors used were:

SO_2	1 pphm = 26.5 ug/m^3
CO	1 ppm = 1200 ug/m^3
NO_2	1 pphm = 19 ug/m^3
O_3	1 pphm = 20 ug/m^3
H_2S	1 pphm = 14 ug/m^3
DUST	1 $ton/mile^2/month$ = 350.5 $mg/m^2/month$

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